



# MINERAL DEPOSITS

MSc in Earth Science and Engineering

2018/19 II. semester

MFFTT720021

COURSE COMMUNICATION FOLDER

**University of Miskolc  
Faculty of Earth Science and Engineering  
Institute of Mineralogy and Geology**

## Datasheet of the course

<b>Course title:</b> Mineal deposits <b>Teacher:</b> Dr. Zajzon Norbert, associate professor	<b>Code of the course:</b> MFFTT720021 <b>Responsible institute:</b> Institute of Mineralogy - Geology <b>Type of course:</b> C
<b>Recommended semester:</b> 2	<b>Pre-requisites:</b> MFFAT710005
<b>No. of contact hours/week (sem.+lab.):</b> 2+1	<b>Type of assessment (exam/pr. mark/other):</b> exam
<b>Credit points:</b> 4	<b>Course:</b> full-time
<b>Task and target of the course:</b> The key target of the course is to introduce the geology of raw material deposits, their spatial distribution, their quantity and quality for the different commodities. <b>Competencies to evolve:</b> <b>Knowledge:</b> T1, T2, T3, T4, T7, T8, T9 <b>Ability:</b> K1, K2, K3, K5, K11, K12, K13 <b>Attitude:</b> A1, A2, A3, A4, A5, A7 <b>Autonomy and responsibility:</b> F1, F2, F3, F4, F5	
<b>Thematic description of the course:</b>  During the introduction the students get familiar with the different groups of commodities – ores, industrial minerals, solid fossil energy minerals, construction materials and their use and history. In the next period, the students will learn the ore forming geological processes and their appearances, which creates the different deposits. Also they will learn the genetic classification of the deposits with national and international examples. It prepares the students to be able to recognize the geological features of mineralizations, alterations and tectonic preformation. It covers all the important mines and ore districts in Europe and worldwide. During the laboratory classes the students can learn the natural occurrences of the ores, non-ores and industrial minerals. They will learn the physical and chemical properties, and texture of the different raw material types, and how to identify and distinguish them. To the proper use of geological maps and sections in 3D, the students will do exercises to develop their capabilities. During the related field trips the students will examine real deposits in the field.	
<b>Type of assessment during the semester:</b> 1. Test about recognizing the different hand specimens of ores, raw materials (35%). 2. Written test about the classification of ores with examples (65%).  <b>Grading limits:</b> > 80 %: excellent 70 – 80 %: good 60 – 70 %: average 50 – 60 %: satisfactory < 50 %: unsatisfactory	
<b>Recommended literature:</b> Robb, L., (2005): Introduction to Ore-Forming Processes: Blackwell Publishing Co., 373 p. (ISBN 0-632-06378-5). EVANS, A. M. 1993: Ore Geology and Industrial Minerals – An Introduction. <i>Blackwell Publishing</i> , ISBN 978-0632-02953-2 CRAIG, J. R. & Vaughan, D. J. 1994: Ore Microscopy & Ore Petrography. <i>John Wiley and Sons Inc.</i> ISBN 10158-0012 Dill H.G. (2010): The „chessboard” classification scheme of mineral deposits. Elsevier, 2010. Cox, D.P. Singer D.E. (1992): Mineral Deposit Models, U.S.G.S. Bulletin 1993.	

## Description of the course

### Mineral deposits

2018/19 year, II. semester

Time of lectures and laboratories: Thursday, 11-14

<b>Week</b>	<b>Topic of the class</b>
2019.02.14.	Overview of the main groups of commodities – ores, raw materials, industrial minerals, construction materials, their research and history
2019.02.21.	Overview of the main groups of commodities – ores, raw materials, industrial minerals, construction materials, their research and history
2019.02.28.	Main types and appearances of geological processes creating ore mineralizations
2019.03.07.	Genetic classification of ores
2019.03.14.	Detailed location examples of the different types
2019.03.21.	Recognition of the geological features of mineralizations, alterations and tectonic preformation related to ore deposits
2019.03.28.	Economic relevance of the different commodities, deposits in Europe and worldwide
2019.04.04.	First test writing
2019.04.11.	Physical, chemical properties of the mineral commodities and how to identify the different minerals
2019.04.18.	3D reading, constructing and interpretation of geological maps and sections related to ore deposits
2019.04.25.	3D reading, constructing and interpretation of geological maps and sections related to ore deposits
2019.05.02.	Studying of active ore deposits in the field. Consultation
2019.05.09.	Holiday
2019.05.16.	Second test writing

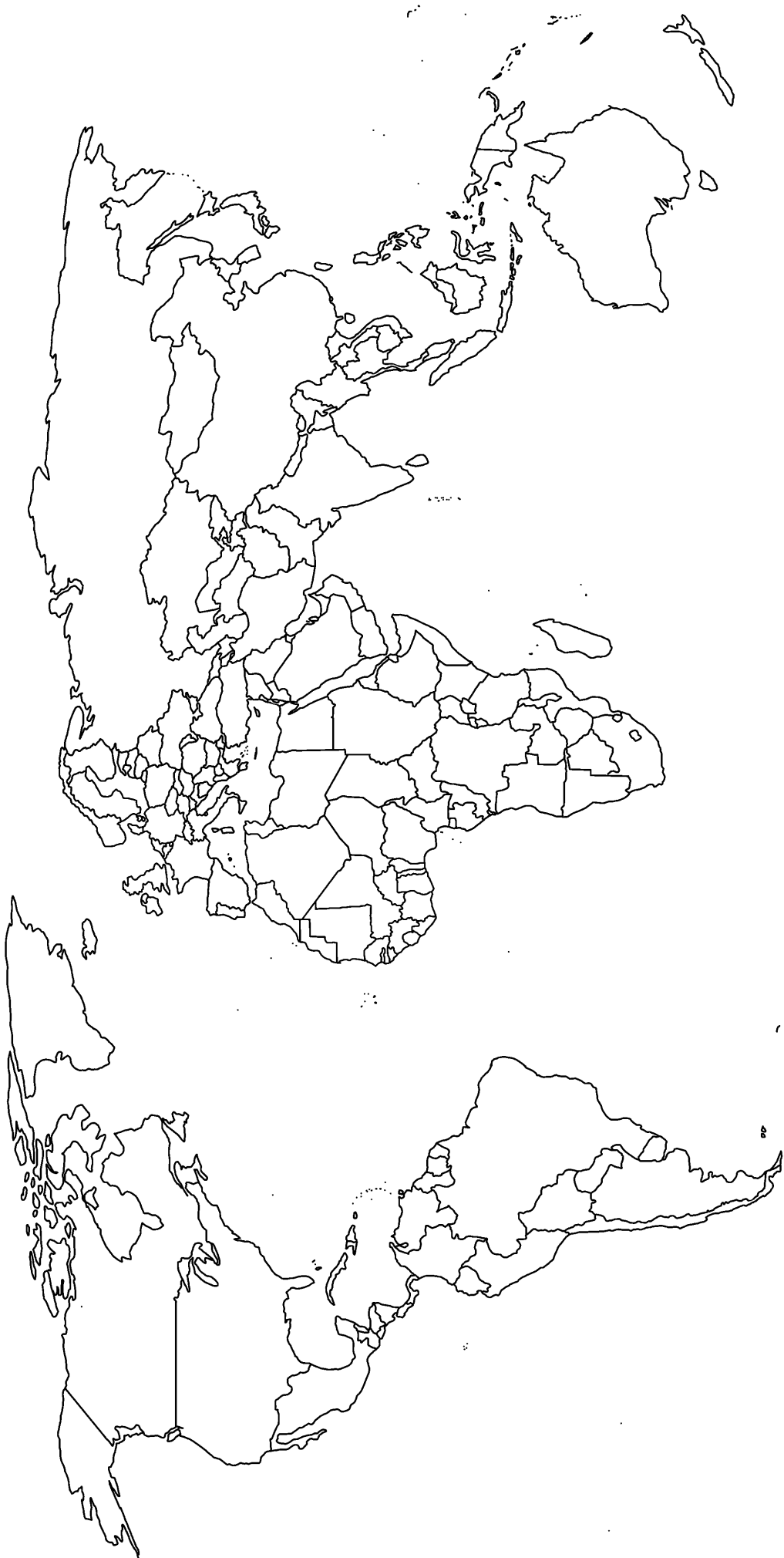
## Example of the written test

### Written test of Mineral deposits

1) Fill the chart and mark the locations on the maps (European locations to the first): (40+20points)

	Deposit	Type	Elements / ore quality	Shape / texture
1	Kargoorlie			
2	Rössing Mine			
3	La Escondia			
4	Palabora			
5	Cornwall			
6	Navan			
7	Witwaterstrand			
8	Olympic Dam			
9	Magnitogorsk			
10	Grasberg			
11	Bushveld			
12	Kiruna			
13	Rio Tinto			
14	Úrkút			
15	Hamersley			
16	Atacama			
17	Sudbury			
18	Nikopol			
19	Butte			
20	Wieliczka			





2) Compare to the HS and LS deposits. Draw the gold solubility eH/pH diagram, and explain there the gold deposition. Give international and Hungarian examples. (8 points)

3) What kind of deposits you know in La Escondia? Draw a small section about that. (5 points)

4) What is the difference between strata-bound and stratiform deposits? Give deposit types and examples. (7 points)

5) What kind of deposits can contain gold? Give examples to all. (10 points)

6) What kind of deposits can contain copper? Give examples to all. (10 points)